
Five New Taxa and Two New Combinations of Acanthaceae from Central America

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ABSTRACT. Five new taxa from Central America, *Anisacanthus nicaraguensis* (compound dichasial cymes, 4-merous red corollas, 3-colporate pollen), *Aphelandra scabra* var. *angustifolia* (narrowly elliptic leaves), *Justicia cauliflora* (some inflorescences on old wood, lanceolate bracts, greenish white corolla), *J. chiriquiensis* (cymose panicles, oblanceolate bracts, 4-porate pollen), and *J. nicaraguensis* (clusters of 2–3 flowers to short spikes, corollas orange, dicolporate pollen), are described. The new combination *Justicia rothschuhii* (Lindau) Durkee, based on *Chaetothylax rothschuhii* Lindau, is made, and the new name *Justicia danielii* Durkee, which replaces *Chaetothylax cuspidatus* D. N. Gibson, is provided.

In preparation of the family treatment of Acanthaceae for the *Flora de Nicaragua* and *Flora Mesoamericana*, examination of recent collections has revealed four new species and one new variety. In each case these taxa were collected from areas that have not been well collected in the past. Also, as the result of combining *Chaetothylax* with *Justicia* (Graham, 1988), two Central American species of the former genus must now be transferred to the latter.

Anisacanthus nicaraguensis Durkee, sp. nov.

TYPE: Nicaragua. Departamento Estelí: "Kukamonga," 18.5 m N of Estelí, 13°14'N, 86°21'W, elev. ca. 850 m, 19 Jan. 1985, *Pedro P. Moreno* 25325 (holotype, MO; isotype, CAS). Figures 1, 6A.

Frutex ad 3 m. Folia ovata, 27–75 mm longa, 9–25 mm lata, apice acuminato, basi acuta ad obtusa; petiolis ad 27 mm. Inflorescentiae spiciformes secundae vel cymae compositae sine floribus basibus; bracteae lineares-subulatae, 3.5–4.5 mm longae. Corollae rubrae, 4-merae, 33–35 mm longae. Fructus clavati, 15–17 mm longi, glabri, seminibus 4.

Shrub to 3 m tall. Young stem quadrate-fluted, glabrous except for puberulence at the nodes; older stems subquadrate or terete, brown epidermis shredding in long strips. Leaves ovate, blades 27–

75 mm long, 9–25 mm broad, apically acuminate, basally acute to obtuse, margins entire to crenulate, glabrous, cystoliths to ca. 0.2 mm long, abundant and plainly visible on both surfaces of dried leaves; petioles to 27 mm long, glabrate. Inflorescences basically compound dichasial cymes lacking the central or basal flower, to 2.5 cm long, inflorescence branches sometimes appearing as secund spikes, rachises minutely puberulent with hairs ca. 0.1 mm long plus occasional, slightly longer glandular hairs; bracts and bracteoles linear-subulate, 3.5–4.5 mm long, 0.3–0.4 mm broad at base, sparingly puberulent. Flowers with short pedicels 0.5–1.5 mm long; calyx 5-merous, 11–15 mm long, segments equal, deeply divided, long subulate, 9–13 mm long, glandular-puberulent; corollas red, 4-merous, 33–35 mm long, puberulent outside, upper lip single-lobed, 29 mm long, 0.8–0.9 mm broad, lower lip 3-lobed, lobes 15–17 mm long, 2.5–3 mm broad, apically acute; stamens 2, exserted, filaments to 33 mm long, attached near base of corolla, glabrous, anthers bithecous, thecae parallel, equal, 3.6–3.8 mm long, pollen prolate, $50\text{--}55.3 \times 27.2\text{--}29 \mu\text{m}$, 3-colporate, pseudocolpi on either side of each pore, insulae lacking; style to 42 mm long, extending beyond stamens, stigma bilobed. Fruit a clavate capsule, 15–17 mm long, 5.8–6.9 mm broad, glabrous, tuberculate, stipe 6–8 mm long; seeds 4, 5.8–6.5 mm long, 4.4–5.1 mm broad, glabrous, margins conspicuously thickened.

Habitat, distribution, and phenology. *Anisacanthus nicaraguensis* is known only from the type collected in flower and fruit in January. The collection area, Cuesta de Kukamonga, is a mesa that has been collected repeatedly in recent years, leading W. D. Stevens of MO to conclude that the plant is rare in this generally arid area that, he told me, has resulted from an old basaltic lava flow now eroded into a series of mesas, flat-topped hills, or mountains with steep slopes. The soil that overlies the basalt is thin and black. He also related that the area has a distinctive vegetation dominated by *Agave*, columnar cacti, thorny shrubs, and small trees, with occasional oaks where the soil is a little deep-



Figure 1. A–E, *Anisacanthus nicaraguensis* Durkee (Moreno 25325). —A, B. Habit. —C. Fruit. —D. Corolla. —E. Enlarged view of inflorescence.

er, and numerous epiphytes. The “Cuesta” is where the Pan American Highway ascends the first mesa going north from Estelí.

Etymology. The species epithet refers to the country in which the type collection was made.

According to Daniel (1982), *Anisacanthus* is a genus of ca. 16 species of perennial shrubs with a center of distribution in mostly dry habitats of Mexico. Its closest relative is presumably the genus

Carlwrightia, which grows in similar habitats, but its species are typically shorter plants with 5-merous corollas (vs. 4-merous) that lack the bright red or orange color characterizing species of *Anisacanthus*. This is the first known collection of the genus *Anisacanthus* in Nicaragua. *Anisacanthus nicaraguensis* most closely resembles *A. tetra-caulis* Leonard of Honduras, but differs from this species in its longer corollas (33–35 mm vs. 20–23 mm), longer

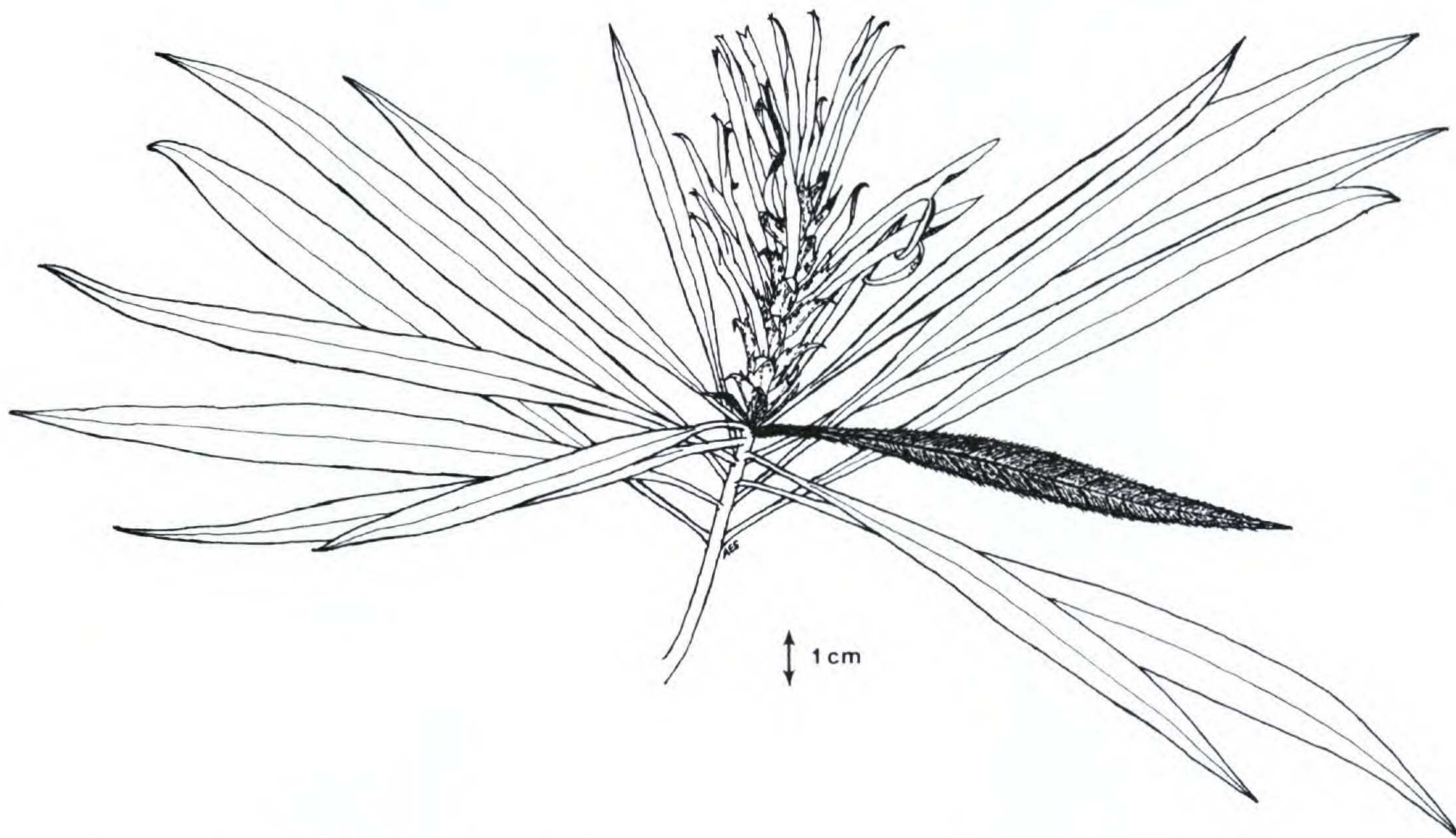


Figure 2. *Aphelandra scabra* (Vahl) Smith var. *angustifolia* Durkee (Herrera, Morris & Mojica 1061, MO). —Habit.

sepals (9–13 mm vs. 5–7 mm), longer bracts and bracteoles (3.5–4.5 mm vs. 1–3 mm), and longer thecae (3.6–3.8 mm vs. 2.9–3.0 mm). The other species of the genus are from Mexico north of Chiapas, the adjacent United States, and South America. No other species of the genus have been described from Central America.

***Aphelandra scabra* (Vahl) Smith var. *angustifolia* Durkee, var. nov.** TYPE: Panama. San Blas: on solid ground at Playón Chico, Río Grande (Ukupseni), between Neba Dummat and camp Kariadi, 09°15'N, 78°15'W, elev. 50–100 m, 2 Nov. 1991, H. Herrera, J. Morris & J. Mojica 1061 (holotype, MO; isotypes, CAS, PMA). Figure 2.

Folia anguste elliptica, 6.7–15.5 cm longa, 0.6–1.3 cm lata; corollae 4.3–4.6 cm longae.

This variety differs from the type variety (which ranges from Mexico to Brazil) by its leaves, which are narrowly elliptic, 6.7–15.5 cm long, 0.6–1.3 cm broad, glabrous above, with appressed hairs beneath that are more dense on the costa; by its puberulous petioles, 2–10 mm long; and by its corolla that is 4.3–4.6 cm long (slightly longer than that of the type variety) and glabrous outside.

Habitat, distribution, and phenology. This variety is described as “common to the edge of the river” in the vicinity of the type locality and “along the creek” in the other area of collection. No other

information is given. These collections were made at lower altitudes, 50–150 m, of the Caribbean coastal region and Pacific watershed area of Panama. These are apparently similar habitats although separated by the Cordillera de San Blas. Additional collection would probably reveal a more extensive range for the variety.

Etymology. The varietal epithet refers to the conspicuously narrow leaves.

Paratype. PANAMA. Panamá: along El Llano–Cartí road, along creek E of road, 9°15'N, 79°00'W, 150 m, 8 Sep. 1989, G. McPherson 14036 (MO).

***Justicia cauliflora* Durkee, sp. nov.** TYPE: Panama. Panamá: 5–10 km NE of Altos de Pacora, ca. 750 m, 7 Mar. 1975, S. Mori & J. Kallunki 4961 (holotype, MO). Figures 3, 6B.

Suffrutex ad 2 m. Folia elliptica, 4.5–20 cm longa, 1.4–6.3 cm lata, apice acuminato, basi attenuata; petiolis 4–20 mm longis. Inflorescentiae spiciformes, terminales et axillares, ad 5 cm longae; bracteae lanceolatae, 14–15 mm longae, 3–4 mm latae. Corollae labiae superae viridi-albae, labiae inferae lavandulaceae. Fructus clavati, 20–22 mm longi, seminibus 4.

Suffrutescent herb to 2 m tall. Young stem quadrangular, strigose. Leaves elliptic, 4.5–20 cm long, 1.4–6.3 cm broad, apically acuminate, basally attenuate, margins crenate, glabrous above, puberulent along costa and main veins beneath, cystoliths visible on both surfaces; petioles 4–20 mm long, strigose. Inflorescences in what appear as terminal

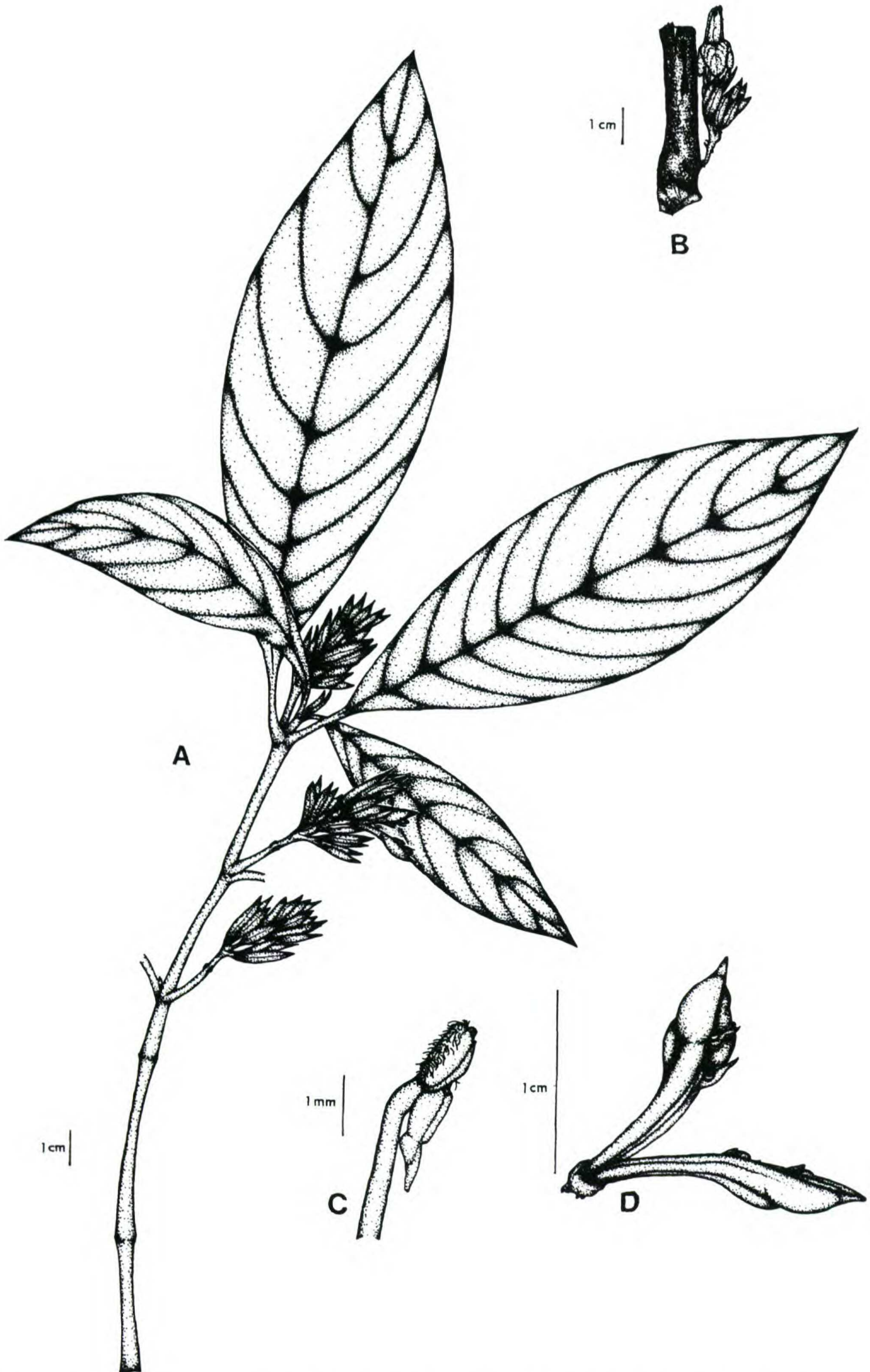


Figure 3. *Justicia cauliflora* Durkee (Mori & Kallunki 4961). —A. Habit. —B. Inflorescence on older, woody stem. —C. Anther with detail of appendage on lower theca. —D. Capsule.

and axillary spikes to 5 cm long, 1.5 cm broad, some occurring on old wood as well, bracts lanceolate, 14–15 mm long, 3–4 mm broad, puberulent, mostly opposite but occasionally subopposite, each bract with one flower most often, but occasionally with two flowers per bract, suggesting that the inflorescence is thyrsoid with dichasia usually reduced to one flower; bracteoles narrowly lanceolate, 13–13.5 mm long, 1.7–2 mm broad, puberulent; peduncle to 18 mm long, strigose. Flowers 5-merous, calyx segments equal, narrowly lanceolate, 12–15 mm long, 1.7–2 mm broad, puberulent; corolla bilabiate, 2.7–2.8 cm long, glandular-puberulent, tube ca. 1.6 cm long, upper lip emarginate, greenish white, ca. 13 mm long, 6 mm broad, lower lip 3-lobed, lavender, ca. 12 mm long, 12 mm broad, lobes rounded, ca. 3 mm long, 4 mm broad; stamens two, exerted to the tip of the upper lip, filaments attached just below the apex of the corolla tube, ca. 11 mm long, glabrous, thecae superposed, upper theca 1.5–1.8 mm long, lower theca with basal appendage, 1.7–1.9 mm long excluding appendage, appendage 0.6–1.0 mm long, pollen prolate, $49\text{--}57.2 \times 31\text{--}40.3 \mu\text{m}$, 2-colporate, one row of insulae on each side of the pore, ca. 8 insulae per row, fitting Graham's (1988) Type 5 pollen most closely. Capsule clavate, 20–22 mm long, 6 mm broad, 5 mm thick, puberulent, seeds 4, suborbicular, ca. 4 mm diam.

Habitat, distribution, and phenology. Found in premontane rainforest.

Justicia cauliflora is recognized by its spicate inflorescences (some occurring on old wood) with lanceolate bracts, 14–15 mm long, greenish white corolla ca. 2.8 cm long that has a lavender lower lip and a glandular-puberulent indumentum, stamens with superposed thecae but only the lower cell with a basal appendage, and filaments that are attached at the apex of the corolla tube. It appears to have some affinity to *J. fortunensis* T. F. Daniel & Wasshausen of Panama but differs from it in bract shape (lanceolate vs. broadly elliptic to subcirculate to obovate), length of calyx lobes (12–15 mm vs. 4.5–6.5 mm) and length of corolla (27–28 mm vs. 8–10 mm). It also resembles *J. veraguensis* T. F. Daniel & Wasshausen of Panama, which has obovate to broadly elliptic bracts, shorter calyx lobes (5–6 mm), and a shorter corolla 10–13 mm long.

Justicia cauliflora is found in open areas of premontane rainforest near Altos de Pacora of the Province of Panamá and along streams in lower altitude forest on the Atlantic slope of Veraguas Province.

Paratype. PANAMA. **Veraguas:** Atlantic slope, Río

Concepción to Río Barrera, ca. 100 m, 16 Oct. 1978, Hammel 5180 (MO).

Justicia chiriquiensis Durkee, sp. nov. TYPE: Panama. Chiriquí: Fortuna Dam, along Quebrada Arena, S of continental divide, $08^{\circ}45'N$, $82^{\circ}15'W$, 1050 m alt., 8 Sep. 1987, G. McPherson 11699 (holotype, MO). Figures 4, 6C.

Suffrutex ad 1.5 m. Folia elliptica ad elliptico-ovata, 10–15 cm longa, 3–8 cm lata, apice acuminato, basi acuta ad obtusa; petiolis 0.5–3 cm longis. Inflorescentiae thyrsoformes, terminales, ad 14 cm longitudine; bracteae oblanceolatae, 4.5–6.5 mm longae, 0.7–1.3 mm latae. Corollae albae, 16–18 mm longae, staminibus exsertis. Fructus non observatus.

Suffrutescent herb to 1.5 m tall. Stem quadrangular, puberulent in younger portions. Leaves elliptic to elliptic-ovate, 10–15 cm long, 3–8 cm broad, apically acuminate, basally acute to obtuse, margins crenulate to entire, glabrous above, puberulent on costa below, cystoliths abundant and prominent on both surfaces of dried specimens; petioles 0.5–3 cm long, puberulent. Inflorescences in loose terminal cymose panicles (thyrses) ca. 14 cm long, 8 cm broad, rachises puberulent; bracts oblanceolate, 4.5–6.5 mm long, 0.7–1.3 mm broad, with short, glandular trichomes plus longer eglandular trichomes; bracteoles similar but slightly smaller. Flowers 5-merous, calyx segments equal, lanceolate, 5–6 mm long, 1–1.3 mm broad, pubescence that of the bracts and bracteoles; corolla white, puberulent outside, bilabiate, 16–18 mm long, the tube 7–9 mm long, basally ca. 4.5 mm broad, the upper lip erect, keeled, apically emarginate, lower lip with pale purple markings, 3-lobed, the lobes apically rounded, each ca. 2 mm long, 3 mm broad; stamens two, exerted to about the tip of the upper lip, thecae superposed, ca. 3 mm long, basally spurred, pollen subprolate, $56.7\text{--}66.7 \times 43.8\text{--}48.3 \mu\text{m}$, 4-porate, trema not differentiated, whole surface microreticulate, studded with rows of smooth, obtuse verrucae, rows separated at each trema area, somewhat resembling Type 9 pollen as described by Graham (1988) except that the verrucae are obtuse instead of conical. Fruit not observed.

Habitat, distribution, and phenology. Known only from the type collection, this species was in flower in September and was collected along a stream in rainforest in the vicinity of Fortuna Dam.

Etymology. The specific epithet refers to the province in which the type was collected.

Among Mesoamerican *Justicia*, *J. chiriquiensis* is recognized by its crenulate leaves, inflorescences in cymose panicles, oblanceolate bracts 4.5–6.5 mm long, 4-porate pollen, and white corolla 16–18

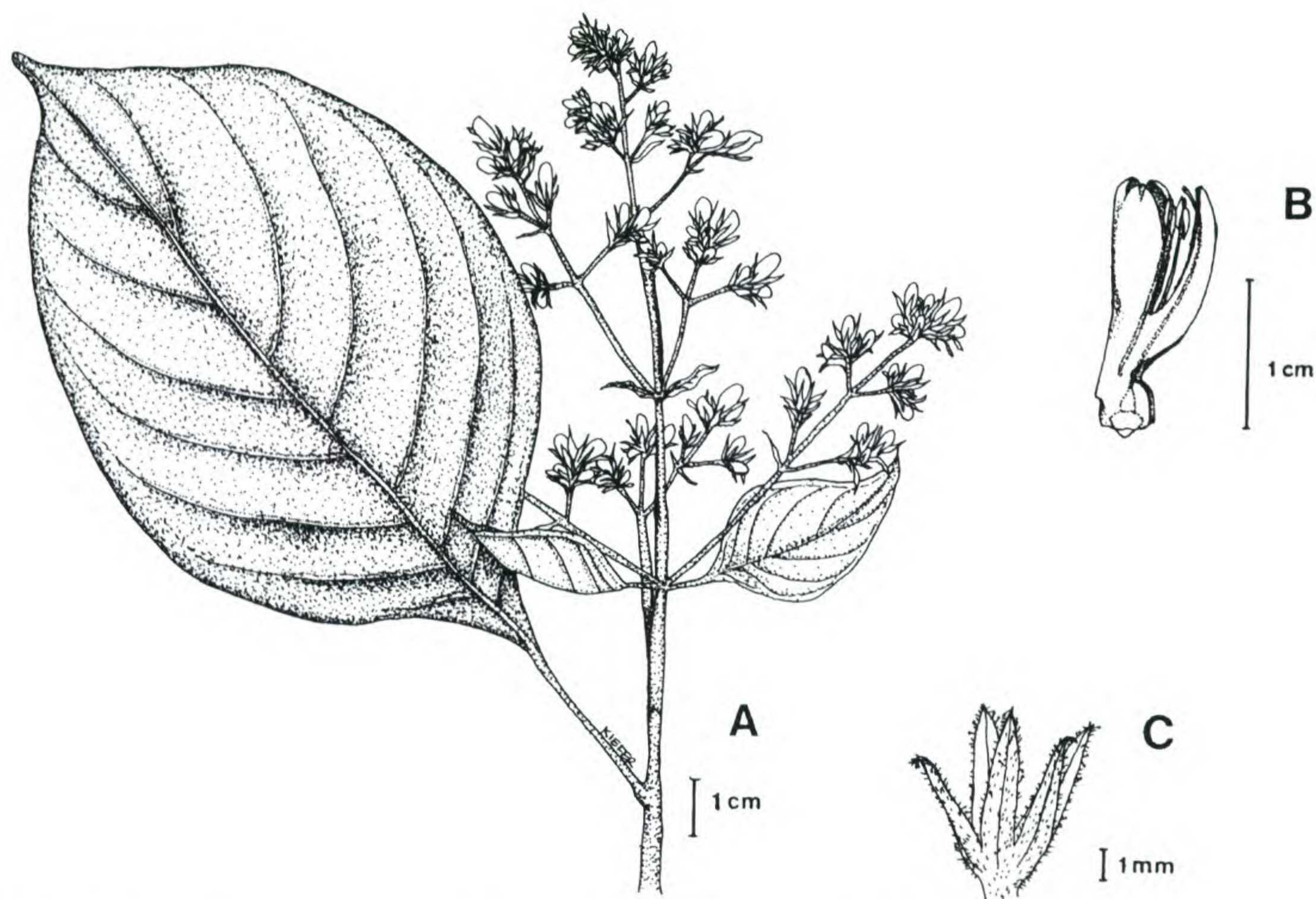


Figure 4. *Justicia chiriquiensis* Durkee (McPherson 11699). —A. Habit. —B. Corolla. —C. Calyx.

mm long. It bears some resemblance to *J. crenata* (Leonard) Durkee but can be distinguished by its crenulate leaves (vs. crenate), cymose panicles (vs. spicate), oblanceolate bracts (vs. elliptic), and white corolla 16–18 mm long (vs. red with yellow-tipped corolla to 50 mm long). It can be distinguished from *J. pectoralis* Jacquin by its elliptic to elliptic-ovate leaves (vs. lanceolate), cymose panicles (vs. spicate), oblanceolate bracts 4.5–6.5 mm long (vs. subulate bracts ca. 2 mm long), calyx 5–6 mm long (vs. 2 mm long), and corolla 16–18 mm long (vs. 8–12 mm).

Justicia danielii Durkee, nom. nov. Replaced name: *Chaetothylax cuspidatus* D. N. Gibson, Fieldiana Bot. 34: 58. 1972. Not *Justicia cuspidata* Vahl, 1790. TYPE: Guatemala. Alta Verapaz: valley of Santa Lucía, on road from Gualán to Cobán, 650 m, Pittier 1792 (holotype, F).

This species has also been collected in Honduras.

Justicia nicaraguensis Durkee, sp. nov. TYPE: Nicaragua. Zelaya: along trail from Cerro Saslaya to San José del Hormiguero, between Caño Majagua and Caño Sucio, tall evergreen forest, ca. 13°45'N, 84°59'–85°00'W, 600–800 m, 10 Mar. 1978, W. D. Stevens 6848 (holotype, MO; isotype, CAS). Figures 5, 6D.

Caulis ligneus, volubilis vel frutex ad 4 m. Folia ovata ad lanceolata, 3.8–10.2 cm longa, 1–3.7 cm lata, apice acuminato, basi obtusa ad rotundata; petiolis ad 5 mm. Inflorescentiae in fasciculae parvae vel spicas ad 15 mm longas; bracteae longi-subulatae, 9–11 mm longae, glandulari-pubescentes; corollae aurantiacae. Fructus clavati, curvi, 33 mm longi, seminibus 4.

Liana or shrub to 4 m tall. Young stem subterete with unilineately retrorse yellow pubescence. Leaves ovate to lanceolate, blades 3.8–10.2 cm long, 1–3.7 cm broad, apically long acuminate, basally obtuse to rounded, margins entire to undulate, sparingly pilose mostly on costa on both surfaces, cystoliths abundant and easily seen in dried leaves above, less visible beneath; petioles to 5 mm long, puberulent. Inflorescences ranging from terminal and axillary clusters of 2–3 flowers to short, compact spikes to 15 mm long, peduncles 9–14 mm long with appressed-pilose trichomes; bracts and bracteoles long-subulate,

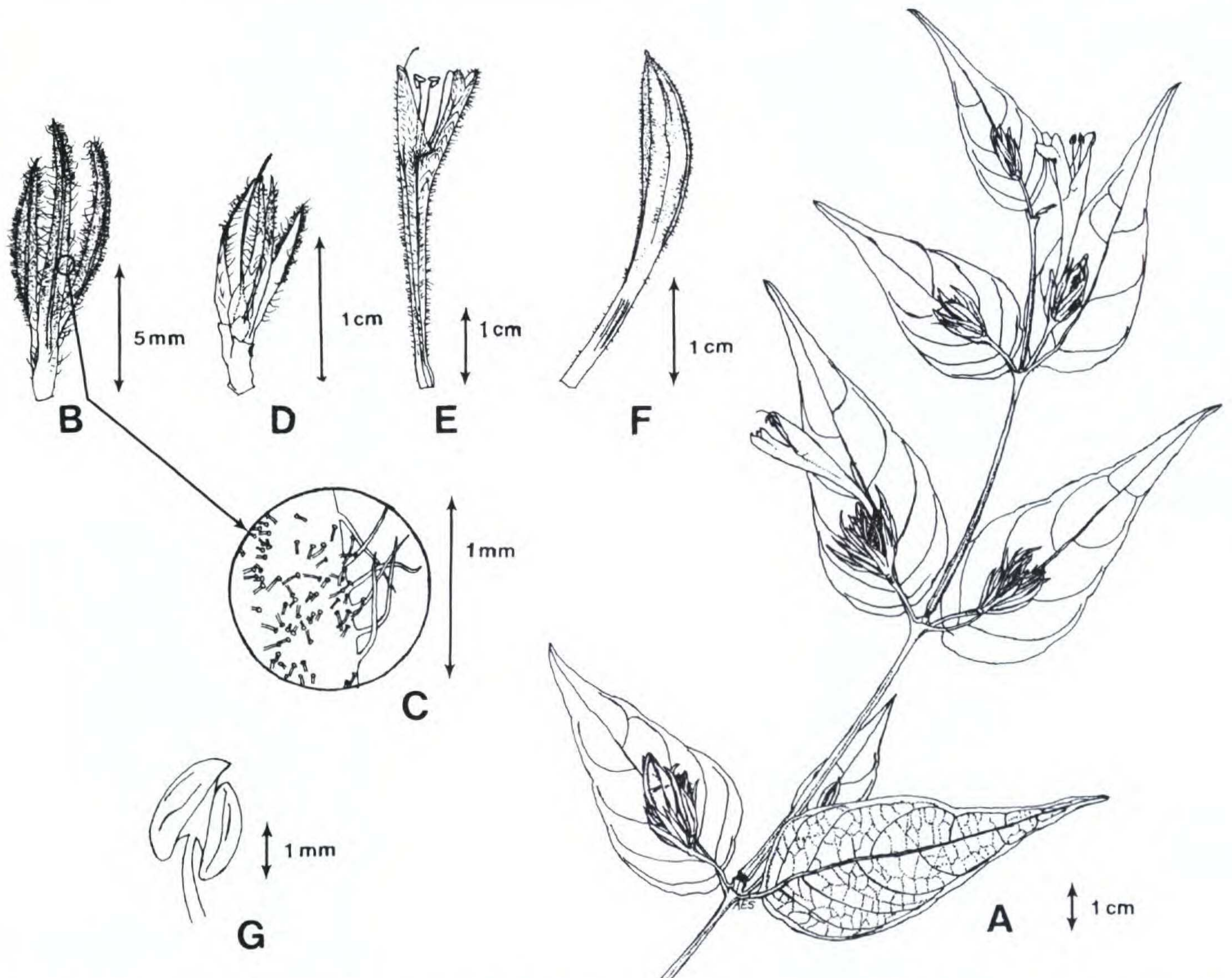


Figure 5. *Justicia nicaraguensis* Durkee. —A. Habit. —B. Bract and bracteoles. —C. Enlargement of bract surface trichomes. —D. Calyx. —E. Corolla. —F. Capsule. —G. Anther thecae. (A from Pipoly 6289; B–G from Stevens 6848.)

bracts 9–11 mm long, bracteoles 8–8.5 mm long, both densely glandular-puberulent externally. Flowers opposite or alternate, one per bract, sessile to subsessile; calyx 7.5–12 mm long, 4-merous, segments equal, long-subulate, 6.5–10 mm long, with

external eglandular puberulence plus smaller glandular hairs; corollas orange, bilabiate, 35–41 mm long, externally pubescent with trichomes 0.3–0.6 mm long, upper lip apically acute, not divided, 10–11 mm long, lower lip 3-lobed, 10–13 mm long, 4–

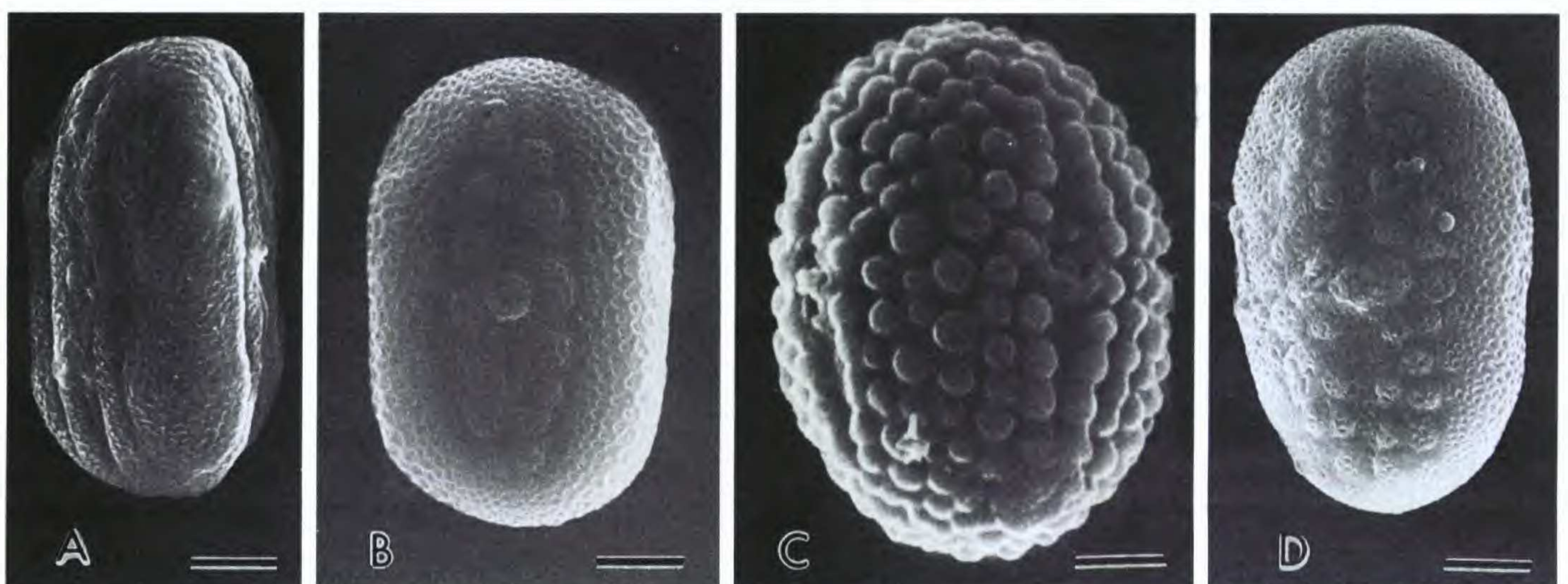


Figure 6. Scanning electron micrographs of pollen. —A. *Anisacanthus nicaraguensis* (Moreno 25325). —B. *Justicia cauliflora* (Hammel 5180). —C. *Justicia chiriquiensis* (McPherson 11699). —D. *Justicia nicaraguensis* (Pipoly 6289). Scale lines represent 10 µm.

4.5 mm broad, lobes apically rounded, 3–4 mm long, middle lobe 2.2–2.5 mm broad, lateral lobes 1.7–2.2 mm broad; stamens attached at the base of the upper lip, filaments 8.5–9.5 mm long, thecae unequally attached at a subperpendicular angle, upper theca 2.2 mm long, lower theca 1.5 mm long, both lacking basal appendages, pollen prolate, 52–54.4 × 32.5–35.5 μm, dicolporate, 4 rows of insulae in each trema region, most closely resembling Graham's (1988) Type 7 pollen; style 32–35 mm long, glabrous. Capsule clavate, curved, 33 mm long, 4 mm broad, seed-bearing area elliptic, not constricted, gradually tapering into a stipe 18 mm long, minutely glandular-puberulent; seeds 4, mature seeds not observed.

Habitat, distribution, and phenology. The three collections of *Justicia nicaraguensis* observed for this description were found along a trail in tall evergreen forest and at a finca in disturbed secondary forest, the species thus appearing to occur in both primary and secondary forest areas. All collections were from the same general area of Zelaya Department, Nicaragua, and were collected in March, each displaying flowers and fruits. Elevation 300–800 m.

Etymology. The species epithet refers to the country in which the original collection was made.

Among Nicaraguan *Justicia*, *J. nicaraguensis* is recognized by its shrubby and/or scandent viny habit and ovate leaves with long acuminate apices and obtuse to rounded bases; short petioles to 5 mm long; inflorescences of axillary headlike clusters of 2–3 flowers or short, compact spikes to 15 mm long; 4-merous calyx; orange corollas 35–41 mm long; and curved, gradually tapered capsule that is 33 mm long. It is not easily confused with other *Justicia* species from Nicaragua, but it shares some characters with *J. sulfurea* (Donnell Smith) D. N. Gibson of Guatemala in its leaf size and shape, its inflorescences of headlike clusters, and its calyx that is 4-merous and of similar length, but differs in its viny habit, its orange corollas that are longer (35–41 mm vs. 20–28 mm), and corolla lips that are about one-half the length of the corolla tube

(vs. about equal). *Justicia nicaraguensis* also resembles *J. madrensis* T. F. Daniel, an endemic from Chiapas, Mexico, in its 4-merous calyx, color and length of corolla, leaf shape and size, and inflorescence type, but differs in its viny habit, longer bracts (9–11 mm vs. 1.8–2.5 mm), inflorescence length (15 mm vs. 55 mm), longer calyx (7.5–12 mm vs. 5.5–9 mm), and length and shape of capsule (33 mm vs. 20 mm, elliptic head with no constrictions vs. elliptic head with medial constriction).

None of the species of *Justicia* from Costa Rica that do not also occur in Nicaragua are likely to be confused with *Justicia nicaraguensis*.

Paratypes. NICARAGUA. **Zelaya:** along same trail as holotype, in tall secondary growth evergreen forest, ca. 13°45'N, 84°58–59'W, elev. 300–450 m, *Stevens 7015* (MO); Finca S of La Pimienta, ca. 13°45'N, 84°59'W, *Pipoly 6289* (CAL, MO).

***Justicia rothschuhii* (Lindau) Durkee, comb. nov.**

Basionym: *Chaetothylax rothschuhii* Lindau, Bull. Herb. Boissier 3: 492. 1895. TYPE: Nicaragua. Matagalpa: on a river bank near Mazmaz, 200 m, 22 Mar. 1894, *Rothschuh 410* (holotype, B destroyed; photo at F); Nicaragua. Chontales: ca. 2.8 km N of Cuapa, disturbed evergreen forest on hillside, 12°17'N, 85°23'W, 400–500 m, *W. D. Stevens 6143* (neotype, MO; isoneotype, CAS).

This species has also been collected in Guatemala, Honduras, and Costa Rica.

Acknowledgments. I thank the curator of MO for providing the specimens for examination, and Laura Goddard, Gretel Kiefer, Allison Shaw, and Kristin Stuchis for the illustrations. I also thank Allison Shaw and Lenore Durkee who made the scanning electron micrographs.

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